Determination of the post-antibiotic effect (PAE) of combitions of extracts from galls of quercus infectoria with vancomycin against methicillin-resistant staphylococcus aureus (MRSA)

Abstract

Post-antibiotic effect (PAE) is one of the pharmacodynamic parameters that can be defined as the time it takes for the microorganisms to regain its normal growth after the complete removal of the antimicrobial agent. PAE on 2 strains of methicillin-resistant staphylococcus aureus (MRSA)-Staphyloccous were induced by galls of Quercus infectoria in combination with vancomycin. The determination of minimum inhibitory concentration (MIC) and PAE were carried out on two strains of S. aureus with vancomycin, methanol and acetone extracts. The test for fractional inhibitory concentration (FIC) index was done to verify the type of interaction of the combinations using checkerboard assay. The FIC value obtained for methanol and acetone extract with vancomycin against both strains of MRSA indicated the interaction of these combinations as synergistic. The combination of methanol and acetone extract with vancomycin significantly enhanced the PAE for both MRSA strains compared to the PAE when these agents were used singly. Both combinations of methanol extract with vancomycin and acetone extract with vancomycin gave slightly higher PAE values for reference strain, MRSA ATCC 33591 compared to the passaged strain, Mu 9495. The longer PAE of extracts from galls of Quercus infectoria in combination with vancomycin in comparison to that of singly tested extracts and antibiotic could have some potential implications for the timing of doses during therapy with antimicrobial combinations against MRSA.